Patient Safety Tip of the Week

March 26, 2019   Patient Misidentification

A patient label affixed to a tube of blood lying in an ER room from a prior patient results in a fatal transfusion error (Hixenbaugh 2019).

A newborn is given to the wrong mother for breastfeeding (Peel 2018).

Cancer treatment is given to the wrong patient (Schulmeister 2018).

An anesthesiologist leaves a patient's EMR open, orders fentanyl for what he thinks is his current patient. The other patient gets fentanyl and aspriates (Minion 2018).

The wrong patient was taken from CT scan for x-rays. No double check of ID band and request was done and patient could not communicate because of medical condition. The exam was completed before they realized it was the wrong patient (Field 2018).

Two women with the same name go in for mammograms on the same day at the same hospital (Arndt 2018). One mammogram shows potential cancer. The other shows no sign of cancer. One patient gets unnecessary tests. The other gets a delay in correct diagnosis and the tumor may advance during the delay.

A near-miss occurs when two patients have the same name and same date of birth (Frost 2018)

These are just a few recent examples of patient misidentification that did, or had the potential to, result in patient harm. Patient misidentification may lead to:
- Surgery on the wrong patient
- Wrong procedure on a patient
- Patients receive the wrong medications
- Patients get the wrong diagnostic test
- Test results get mixed up with another patient (this often affects 2 patients)
- Switched babies!
- And many other untoward consequences

We did a webinar on patient misidentification for Patient Safety & Quality Healthcare (PSQH) last August. It is still available on the PSQH website (https://www.psqh.com/resource/upcoming-patient-misidentification-minimizing-the-risks/). Today's column expands upon the material in that webinar and highlights what continues to be a significant patient safety problem. We've discussed it in the numerous

columns listed at the end of today's column. We particularly point you to our January 19, 2016 Patient Safety Tip of the Week "Patient Identification in the Spotlight" for some in-depth analysis.

Both low-tech and high-tech factors contribute to patient misidentification and interventions to prevent such events are also both low-tech and high-tech. When we did our first electronic medical record implementation we actually predicted we would see an increase in wrong patient events (see our May 20, 2008 "CPOE Unintended Consequences – Are Wrong Patient Errors More Common?").

The oncology case (Schulmeister 2018) illustrates how a series of factors can contribute to a patient misidentification incident. A cancer patient arrived at busy outpatient registration area. The registration clerk copied the name from a driver's license to a computer search screen and chose the first name from list and printed a wristband. The clerk asked the patient if the information was correct and he nodded "yes" (he was not wearing glasses). The patient was then sent to busy infusion center for his second chemotherapy treatment. An RN there asked him if his name is <blank> and if his birthday is the date that she read from his wristband. He nodded yes. He didn't notice she gave wrong birthday because she had a "heavy accent" and "rattled off numbers" and the infusion room was loud and busy and that he "didn't hear well." As a result, the patient received the chemotherapy intended for another patient who had the same name but a different birthdate. There was no apparent harm, but the incident resulted in a lawsuit anyway.

This case illustrates several factors that commonly contribute to patient misidentification incidents. First, it illustrates the **"picklist" error** (also variously known as the cursor error, menu error, juxtaposition error, etc.) or the **"first option" error**. There is a tendency, when choosing from a list on a computer screen, to select the first option presented. Unfortunately, many IT systems may truncate lists so that the user does not scroll down to see if there are more options (the "**truncated scroll syndrome**"). You need to ensure that your computer systems don't allow such truncation when there are more than one patient with the same name.

But it also illustrates a very fundamental error in patient identification: **failure to use active, rather than passive, identification**. Joint Commission requires at least 2-factor identification of patients and most organizations use name (first and last) plus date of birth. But, do not ask the patient if he/she is "John Jones" and is "xx/xx/xxxx" your date of birth. Rather ask the patient to provide his/her name & DOB "What is your name?" What is your date of birth?". But issues like hearing impairment, language problems, accents, speech problems, and things like dementia or other cognitive impairments may complicate the issue. And what if there are two patients with the same name and DOB? When your system identifies the occurrence of 2 (or more) patients with the same name and DOB you must do at least 2 things. First, you must somehow flag in your IT systems that there are more than one patient with this name and DOB. Second, you must let both patients know about the duplication so they can be on the alert any time they interact with the health system.

The Australian case ([Minion 2018](#)) occurred shortly after a new EMR (electronic medical record) was implemented. An anesthesiologist forgot to order something on prior patient so opened the prior patient's chart in the EMR and entered an order. But he forgot to close that prior patient's chart. Then, thinking he is in chart of patient currently in OR, he entered an order for fentanyl. He also overrode multiple alerts. The prior patient received the fentanyl intended for current patient. That patient died of aspiration pneumonia resulting from mixed drug toxicity.

This illustrates the "**failure to log off**" issue. This occurs when a physician leaves the order entry screen temporarily without logging off. Sometimes, a second physician comes by and leaves orders on another patient (without logging on separately). The first physician then returns to the screen and assumes that he/she is still entering orders on the original patient. In this case, the same physician returned after failing to log off. Your IT systems need to have strict timeout rules so that records are closed after a specified period of inactivity.

We don't know whether that EMR had the patient name and identifying information on every screen. But it also raises the issue of how important it is to have in place a way of forcing the user to make sure they have the correct patient. In several of our columns, we've discussed some of the tools developed by Adelman and colleagues to minimize the chances of such occurring ([Adelman 2013](#)). The intervention tools they developed were simple yet elegant. The "**ID-verify alert**" was triggered by opening an order entry screen and prompted the physician with the patient name, gender and age and the physician was required to acknowledge that was the correct patient before being allowed to proceed with order entry. The "**ID-reentry function**" prevents the provider from accessing the order entry screen until he/she re-enters the patient's initials, gender and age. These interventions were piloted in a randomized fashion. While the "ID-verify alert" reduced errors by 16%, the "ID-reentry function" reduced them by 41%.

The case of the fatal transfusion error ([Hixenbaugh 2019](#)) points out vulnerabilities in specimen mixups that we've discussed in columns listed below, most recently in our October 9, 2018 Patient Safety Tip of the Week "[More on Lab Specimen Mixups](#)". Though there were numerous errors and contributing factors in this case, the two most glaring errors were:
- Failure to remove unused blood specimen tubes from a room after one patient left
- Affixing a patient label over a pre-existing label

Obviously, both of those should never happen.

Whereas for biopsy and surgical specimens, labeling should be done after specimen collection, the procedure for labeling blood specimens is not as clearcut. Various organizations and regulating bodies around the world have differing policies. The Joint Commission simply states that all containers for blood or other specimens be labelled in the presence of the patient. Lippi and Plebani, who have done much quality and safety work related to lab specimens, make a case that tubes for collecting blood specimens should be pre-labeled ([Lippi 2017a](#)). That labeling can still take place in the presence of

the patient. It just means the labels are affixed to tubes before venipuncture. They make that recommendation based upon evidence that post-collection labeling of tubes carries a higher risk of identification errors (Lippi 2011).

The majority of "lab errors" actually occur in the pre-analytic phase and are often related to problems with specimen collection and identification. Lab errors can lead to:
- Misdiagnoses
- Delays in diagnosis or treatment
- Incorrect treatments
- Repeat surgical procedures

Causes of patient identification errors in medical laboratories (Lippi 2017b):
- Homonymy (similar sounding names)
- Incorrect patient registration
- Reliance on wrong patient data
- Error in order entry (incorrect or incomplete data entry)
- Order mistranscription
- Inappropriate labeling of specimens (mislabeled, partially labeled, unlabeled, illegibly labeled)
- Inaccurate entry or transmission of test results in the Laboratory Information System

See our numerous columns on laboratory errors listed below.

The breastfeeding mixup (Peel 2018) highlights a problem that is probably a lot more frequent than you'd realize. We discussed it in our December 11, 2012 Patient Safety Tip of the Week "Breastfeeding Mixup Again" and went on to do a FMEA (Failure Mode and Effects Analysis) that demonstrates the multiple factors that may contribute to such mixups (see our April 8, 2014 Patient Safety Tip of the Week "FMEA to Avoid Breastmilk Mixups").

So, how often do such patient misidentification incidents happen? No one knows for sure. There are no good statistics. Probably the best estimate is that there are about 60 to 100 wrong patient orders per 100,000 electronic orders (Adelman 2015, Adelman 2013). A survey by the Ponemon Institute (Ponemon Institute 2016) found that 86 percent of respondents have witnessed or know of a medical error that was the result of patient misidentification.

Some of the most salient factors contributing to patient misidentification are:
- Similarity of names (homonymy)
- Computer issues
- Computer workflow issues
- Communication issues
- Workarounds
- Scheduling changes
- Time pressures

- Complacency

You would be surprised to see how often patients with the same or very similar names may be hospitalized at the same time. Shojania (Shojania 2003) described a near-miss related to patients having the same last name and noted that a survey on his medical service over a 3-month period showed patients with the same last names on 28% of the days. The problem is even more significant on neonatal units, where multiple births often lead to many patients with the same last name being hospitalized at the same time and medical record numbers being similar except for one digit. Gray et al. (Gray 2006) found multiple patients with the same last names on 34% of all NICU days during a full calendar year, and similar sounding names on 9.7% of days. When similar-appearing medical records numbers were also included, not a single day occurred where there was no risk for patient misidentification. Both these studies were on relatively small services so one can anticipate that the risks of similar names is much higher when the entire hospitalized patient population is in the database. And in one hospital district in Texas, 2488 patients were named Maria Garcia, and 231 of these (9.3%) also shared the same date of birth! (Lippi 2017b).

Problems with our IT systems and computer workflow issues today are major contributors to patient identification errors. In our May 20, 2008 "CPOE Unintended Consequences – Are Wrong Patient Errors More Common?") we noted the following factors that contribute to wrong patient errors:
- Remote order entry
- Patient name and other ID items not appearing on every screen
- The cursor/stylus or juxtaposition error
- The "truncated scroll" syndrome and similar names
- The dual system issue
- The failure to log off issue

See that 2008 column and our several other columns below for details of each of those factors.

We included the case of the patient getting x-rays that were not ordered (Field 2018) because it illustrates the problem of the patient not being able to be an active participant in the identification verification process. This patient could not communicate because of a medical condition. You'd be surprised how often active patient participation is not possible. The following are common **barriers to communication**:
- Hearing impairment
- Language problems
- Accents
- Speech problems
- Aphasia
- Dementia or other cognitive impairment
- Newborns and young children

In such cases you may need to use interpreters or verify identification with some other reliable source (eg. family). This is also where use of **biometrics** may be especially valuable.

So, what are the interventions we can use to reduce the risk of patient misidentification? Some of them are listed below:

- Timeouts (and not just in the OR!)
- Adelman's IT tools for patient verification
- Steps to avoid failure to log off IT systems
- Other IT tools mentioned previously (flag same names, avoid scrolling/truncation issues)
- Ensure patient ID is present on all computer screens
- Synchronize computer apps (eg. make sure your PACS system is showing the same patient as your EMR)
- Barcoding
- Biometrics
- Photographs
- Independent double checks
- Audit and feedback
- Education (which, unfortunately, is low in effectiveness of action)
- Empower patients
- Scheduling
- Handwriting

Timeouts are one of our principle tools to verify correct patient identification (as well as procedure, laterality, etc.) and these should not only be done in OR's but also in any other area where procedures are being done. We actually developed one of the first timeout protocols in the mid-1990's after a case in which 2 consecutive patients received the wrong intraocular lenses. New York State a year later adopted the protocol almost verbatim and Joint Commission's Universal Protocol followed shortly thereafter with most of the same features. But timeouts are not infallible. Why do timeouts fail?

- Complacency
- Failure of all to focus attention on the timeout
- Passive rather than active involvement
- Failure to buck the "authority" gradient
- Fear of speaking up
- Failure of each participant to verify from primary source documents
- Time pressures

IT solutions include the above mentioned tools developed by Adelman and colleagues to minimize the chances of such occurring (Adelman 2013), including the "**ID-verify alert**" and the "**ID-reentry function**". You also need to ensure that the patient's name and key identification information appear on every screen on your IT systems and that you avoid the scrolling and truncation problems discussed above. And you need good procedures for automatic timeouts after periods of computer inactivity.

As of January 1, 2019 Joint Commission has a new requirement for **newborn naming** (TJC 2018a). You must use two distinct methods of identification for newborn patients.

You need distinct naming conventions using the mother's first and last names and the newborn's sex (for example, "Smith, Judy Girl" or "Smith, Judy Girl A" and "Smith, Judy Girl B" for multiples). You also need standardized practices for identification banding (for example, two body-site identification and bar coding). You also need to establish identification-specific communication tools among staff (for example, visually alerting staff with signage noting newborns with similar names)

In our August 2015 What's New in the Patient Safety World column "Newborn Name Confusion" we discussed another study by Adelman and colleagues in which they applied their "**retract and reorder**" (**RAR**) tool to assess the impact of a **change in naming conventions for newborns** (Adelman 2015). Hospitals need to create a name for each newborn promptly on delivery because the families often have not yet decided on a name for their baby. Most hospitals had used the nonspecific convention "Baby Boy" Jones or "Baby Girl" Jones. They suggested an alternative naming convention. It uses the first name of the mother. For example, it might be "Wendysgirl Jones". Montefiore Medical Center switched to this new naming convention in its 2 NICU's in July 2013 and the RAR tool was used to measure the impact on wrong patient errors. **Wrong patient error rates** measured in the one year after implementation of the new more specific naming protocol were **36% fewer** than in the year prior to implementation.

Barcoding is arguably our most important patient safety intervention. Barcoding is used most often as a medication safety tool but you should be using barcoding for multiple other things. For example, you can match barcodes between the patient's bracelet and a radiology requisition or with medical devices. Barcoding can also be used during procurement of blood samples to reduce wrong blood in tube errors (Kaufman 2019). But barcode **workarounds** have been used since barcoding was first implemented. Koppel et al (Koppel 2008) identified 15 types of workarounds and 31 causes for workarounds. Though workarounds may improve efficiency and sometimes improve safety, more often they put patient safety in jeopardy.

Biometrics are gaining in importance to help prevent patient misidentification. Examples include:
- Finger prints
- Retina/iris scans
- Palm vein scans
- Facial recognition

Biometrics are very accurate but you need a fallback because sometimes they may not work. For example, my fingerprint access on my iPhone may not work when I come out of the shower. Facial recognition access to my laptop sometimes does not work in dim light. Retinal or iris scans could get obscured by some eye pathologies. In the ideal world we'd have a National Unique Patient ID paired with biometrics but even that raises some privacy/fraud issues.

We are also advocates for **patient photographs**. Digital photos are easy enough to obtain and most EMR's have a field in which you can place a photo. See our April 30, 2013 Patient Safety Tip of the Week "Photographic Identification to Prevent Errors" for

examples of how photos can help prevent identification errors. But you need to be wary that circumstances may make use of photos unhelpful. For example, they may not be useful in patients with facial trauma. And you have to have a system to ensure your photos are not outdated. Butler (Butler 2018), in an article on best practices for accurate patient identification, also strongly endorses use of patient photographs. She also points out that requiring a photo ID, such as a driver's license or state identification card, is a preferred practice but isn't always available for populations such as children and seniors and others who don't drive.

Independent double checks can be important tools. You already use them when administering transfusions or high alert drugs. But keep in mind they are not infallible. We often quote the statistic that an inspector errs 10% of the time when inspecting someone else's work. So your double checks need to be truly independent double checks (see our October 16, 2012 Patient Safety Tip of the Week "What is the Evidence on Double Checks?").

And we often forget an old tried and true way of ensuring we have the correct patient: look at their **handwriting!** Most patients admitted to hospitals or undergoing a procedure have signed a consent form or other document and usually have on file an older signed document for comparison. Just keep in mind that some conditions may cause a change in handwriting. For example, in Parkinson's Disease we typically see patient's handwriting become progressively smaller (micrographia) and in other cases tremor may alter signatures. And today's signatures obtained on digital pads often bear little resemblance to handwritten signatures (Butler 2018).

We included "**scheduling**" on our list of interventions. Scheduling is of great importance in avoiding wrong site surgery (see our October 30, 2012 Patient Safety Tip of the Week "Surgical Scheduling Errors"). But scheduling may also be important in avoiding other cases of patient misidentification. For example, you could use IT algorithms to avoid scheduling two patients with similar names for clinic on the same day. If you must schedule two such patients on the same day, set up a flag that there will be more than one patient with similar names. Simply scheduling them at different times is not adequate since patients often show up early in hopes of getting seen sooner. We also recommend the daily "**huddle**" as a good time to identify potential misidentification opportunities. When you meet with your clinical and front office staff in the morning of a clinic/office session, simply look through the schedule for patients with similar sounding names. Also, **beware of last minute scheduling changes**. These have often been a factor in many cases of wrong patient surgery. Any time you make late changes, make sure all involved are aware that such changes have been made.

All your heathcare workers need to have **education and training** about patient identification issues. That includes not only your clinical staff but all your front office and back office staff and even your cleaning and maintenance workers. You can do some limited audit and feedback. But we always go back to our mantra "**Stories, not statistics!**". You are not likely to change anyone's behavior with statistics. You need to tell a story. It's best if you can use a story of an untoward event that occurred in your

organization. Or use an event that happened to a family member. Or use an example from an event you found elsewhere. The most powerful way is to have a healthcare worker who made an error tell how that affected their own life.

And don't forget to **educate and empower your patients**. At select opportunities (eg. registrations, first visits, checking into hospital, etc.) explain to patients both the reason(s) for verification of identity and the procedure(s). We use scripts such as "It may seem silly or annoying to you that we do this every time you interact with a healthcare worker, but this is to prevent serious errors that could occur if we mix you up with another patient." "You should also speak up if a healthcare worker fails to ask you these questions!"

The other problem related to patient identification has to do with our medical records and other patient databases. As health entities merge, we need a way to integrate medical records into one system and avoid **duplicate medical records**. As we import data from multiple sources, we need to ensure the data goes into the correct record. Patient demographic information may also change (marriage, new address, etc.). So, we end up with a large number of duplicate patient records in our databases. Average duplicate rate within healthcare organizations is 18% and about a third of insurance denials are related to patient identification issues (Black Book Research 2018). A discussion about **enterprise master patient index** (EMPI) technologies and tools like "**referential matching**" are beyond the scope of today's column but your organization should be keeping abreast of work being done to reduce such duplication.

A good resource for patient identification issues is SAFER (Safety Assurance Factors for EHR Resilience) (ONC 2016). This includes good guidelines and has a very useful checklist for ensuring correct patient identification. The survey by the Ponemon Institute (Ponemon Institute 2016) also has information about root causes of patient misidentification issues. ECRI Institute's Partnership for Health IT Patient Safety also produced a very helpful Toolkit for the Safe Use of Health IT for Patient Identification (ECRI 2017). The Joint Commission (TJC 2018b) also lists numerous steps that organizations can and should be taking to minimize the risk of patient misidentification, including use of the National Quality Forum (NQF)-endorsed "retract and reorder" algorithm noted above.

What else should you be doing? Review any **RCA's** (root cause analyses) you have done on cases with patient misidentification. Do a **FMEA** (Failure Mode and Effects Analysis) on some procedure prone to patient misidentification incidents (see, for example, our April 8, 2014 Patient Safety Tip of the Week "FMEA to Avoid Breastmilk Mixups"). Make sure you **track and monitor issues related to patient ID** in your Quality Improvement activities. That should include:
- Track all patient misidentification errors
- Track use of temporary ID's to ensure they were converted to permanent ID
- Use "order-retract-reorder" algorithm to ID orders related to patient ID issue
- ID cases where certain items were changed (eg. gender, blood type)
- Identify duplicate records

Patient misidentification often has dire consequences. We also need to learn from our own experiences and those of others and adopt best practices as they are discovered.

*Important update: See our September 10, 2019 Patient Safety Tip of the Week "Joint Commission Naming Standard Leaves a Gap".

Some of our prior columns related to patient identification issues:
May 20, 2008   "CPOE Unintended Consequences – Are Wrong Patient Errors More Common?"
November 17, 2009   "Switched Babies"
July 17, 2012   "More on Wrong-Patient CPOE"
June 26, 2012   "Using Patient Photos to Reduce CPOE Errors"
April 30, 2013   "Photographic Identification to Prevent Errors"
August 2015   "Newborn Name Confusion"
January 12, 2016   "New Resources on Improving Safety of Healthcare IT"
January 19, 2016   "Patient Identification in the Spotlight"
August 1, 2017   "Progress on Wrong Patient Orders"

Some of our prior columns related to identification issues in newborns:
November 17, 2009   "Switched Babies"
December 20, 2011   "Infant Abduction"
September 4, 2012   "More Infant Abductions"
December 11, 2012   "Breastfeeding Mixup Again"
April 8, 2014   "FMEA to Avoid Breastmilk Mixups"
August 2015   "Newborn Name Confusion"
January 19, 2016   "Patient Identification in the Spotlight"
July 19, 2016   "Infants and Wrong Site Surgery"
August 1, 2017   "Progress on Wrong Patient Orders"

Some of our other columns on errors related to laboratory studies:
- October 9, 2007   "Errors in the Laboratory"
- November 16, 2010   "Lost Lab Specimens"
- October 11, 2011   "LEAN in the Lab"
- March 6, 2012   ""Lab" Error"
- April 2012   "Specimen Labeling Errors"
- January 22, 2013   "You Don't Know What You Don't Know"
- April 15, 2014   "Specimen Identification Mixups"
- November 25, 2014   "Misdiagnosis Due to Lab Error"
- March 24, 2015   "Specimen Issues in Prostate Cancer"
- May 26, 2015   "How Safe is the Lab You Use?"
- March 29, 2016   "Inappropriate Lab Testing"

- September 27, 2016   "Lab Errors Costly"
- November 15, 2016   "Surgical Specimen Mishaps"
- March 20, 2018   "Minnesota Highlights Lost Tissue Samples"
- October 9, 2018   "More on Lab Specimen Mixups"

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